PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems

Module PMRF-ISSS135/II/2024

Quantum Error Correcting Codes

Name of the PMRF student

Aswanth T

Required background of the students taught

Students from the background of physics, electrical engineering, computer science or mathematics will find this course useful.

Basic understanding of linear algebra is assumed. Familiarity with quantum mechanics will be useful. However, the lectures will cover the required fundamentals.

Details of the content of the module

This is an introductory level course on quantum error correcting codes.

Brief syllabus:

- **Postulates of quantum mechanics**
- **Density operator formalism**
- **Quantum operations and quantum channels**
- **Simple quantum codes**
- **General quantum error correction**
- **Mathematical preliminaries for stabilizer formalism**
- **Stabilizer formalism**
- **Calderbank-shor-steane codes**

Schedule of the module

Recorded video lectures will be uploaded twice every week on Mondays, Tuesdays and Thursdays.

Starting date: 16th September

Ending date: 18th October

Total hours: 30

Meeting link : Will be shared later

Link

Contact email ID: isss.forum@gmail.com

Registration link: https://forms.gle/bNnt2UrjVCx9TmaD7